

#9

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Schwartz
Serial No.: 09/815,978
Filed: March 22, 2001
For: HYDRAZINE-BASED AND CARBONYL-
BASED BIFUNCTIONAL CROSSLINKING
REAGENTS
Art Unit: Unassigned
Examiner: Unassigned

I hereby certify that this paper and the attached
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04/17/01
Date

Kelly Fischer

PETITION PURSUANT TO 37 C.F.R. §1.182 - QUESTIONS NOT SPECIFICALLY
PROVIDED FOR: REQUEST FOR ENTRY OF REPLACEMENT DRAWINGS

ATTN: BOX PGPUB DRAWINGS

Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

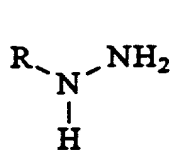
This is a Petition pursuant to 37 C.F.R. §1.182 to request the entry of replacement
drawings in the publication of the above-identified application. The replacement drawings
provided herewith are Formal Drawings. Therefore these drawings are of better quality
than those originally filed. Applicants respectfully request the entry of the replacement
drawings.

Respectfully submitted,
HELLER, EHRMAN, WHITE & McAULIFFE LLP

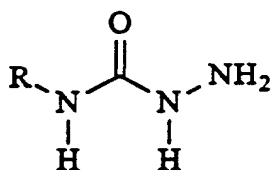
By:

Stephanie L. Seidman
Registration No. 33,779

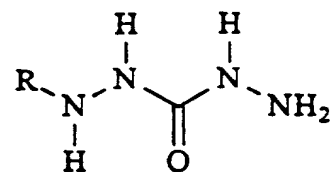
Attorney Docket No.: 37154-753
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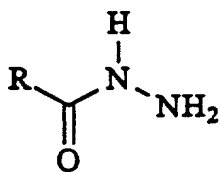
hydrazine



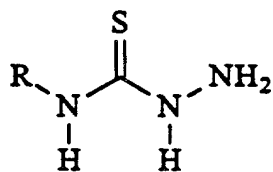
semicarbazide



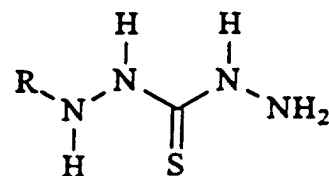
carbazide



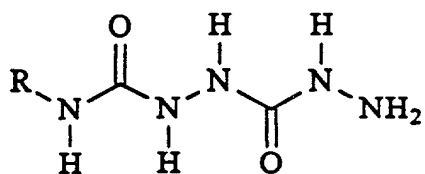
hydrazide



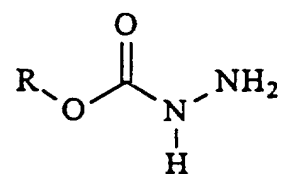
thiosemicarbazide



thiocarbazide



carbonic acid dihydrazine



hydrazine carboxylate

FIG. 1

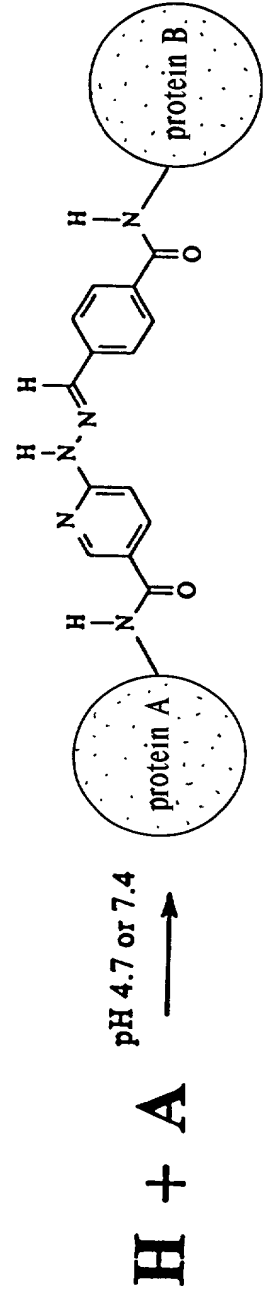
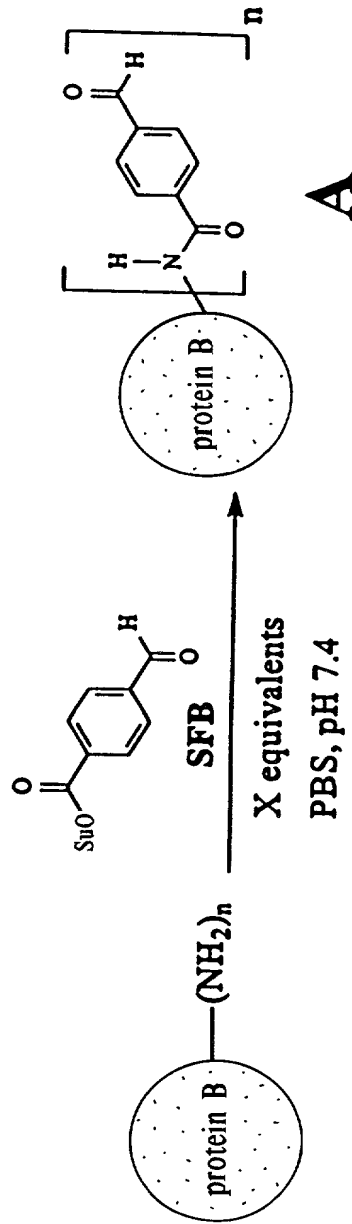
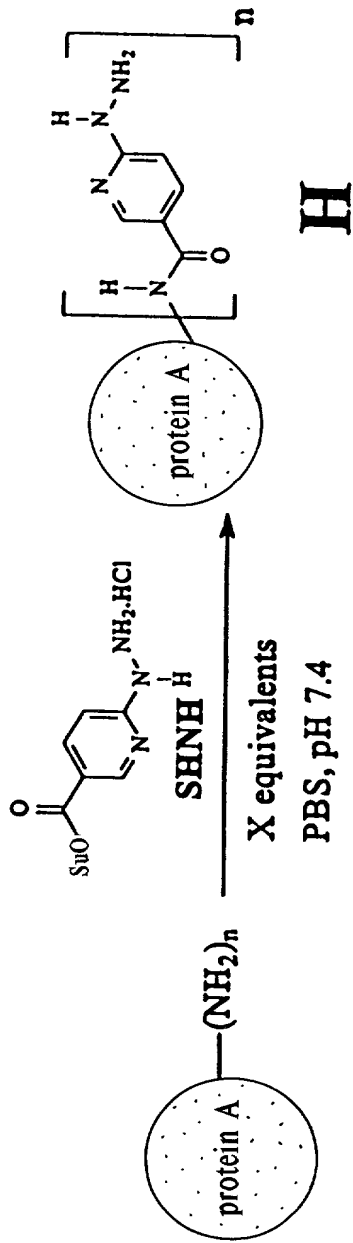


FIG. 2

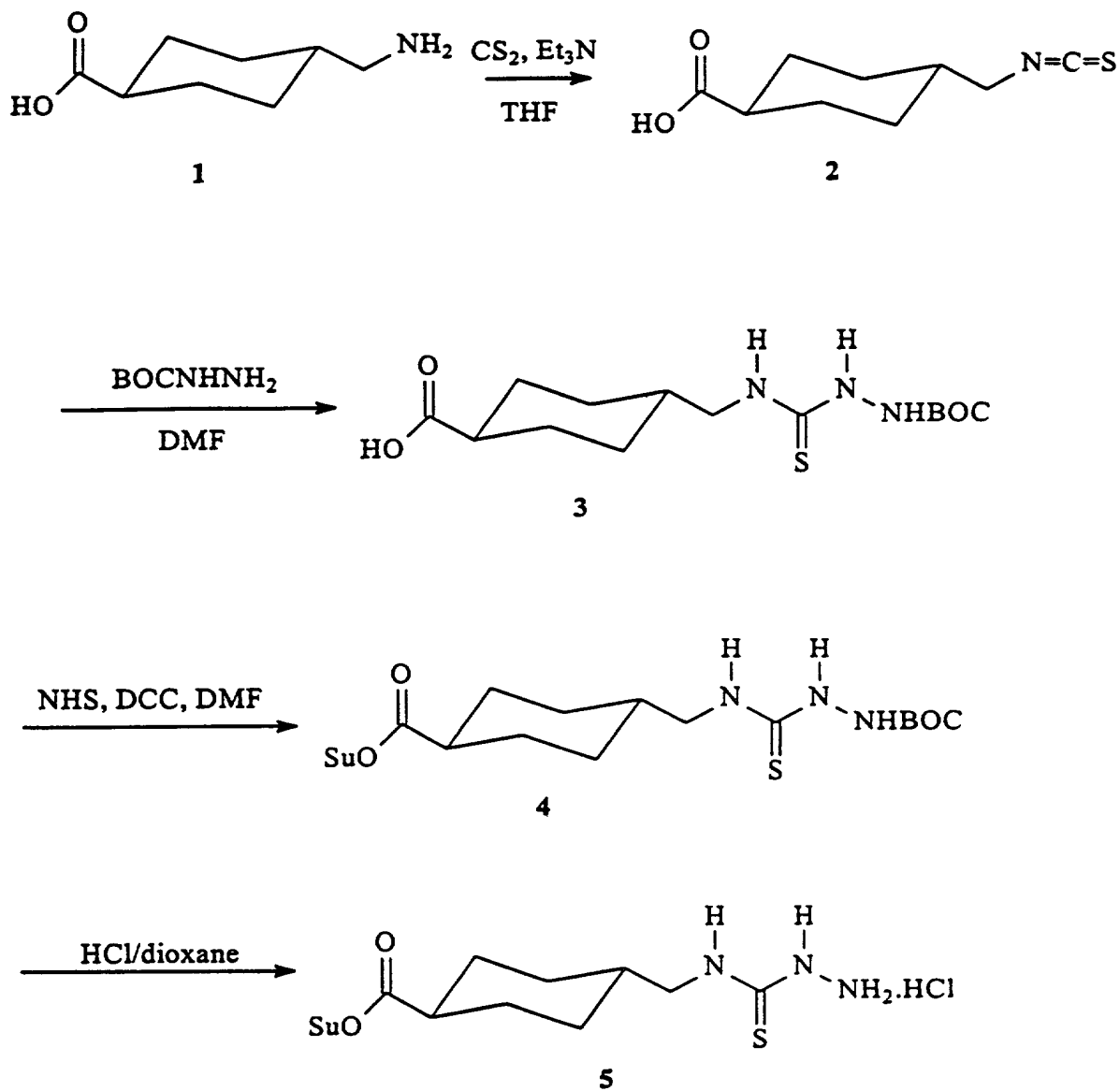


FIG. 3

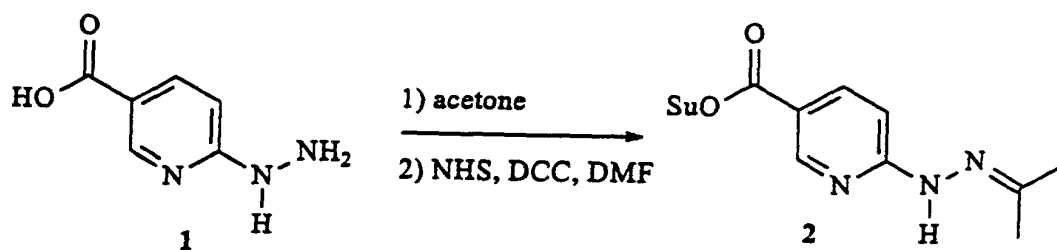
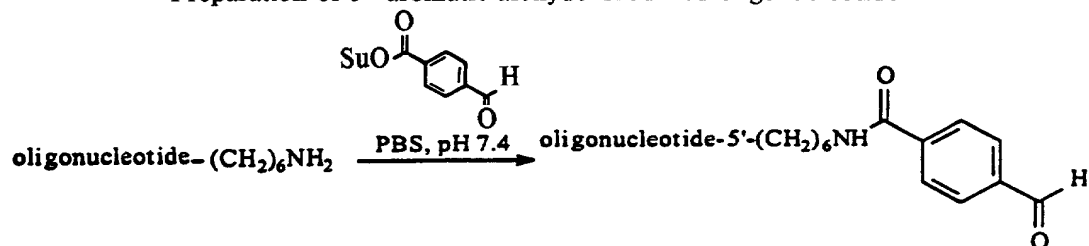
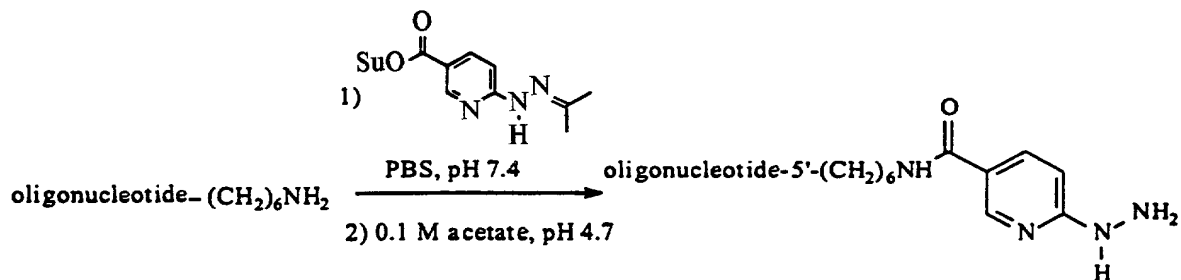


FIG. 4

Preparation of 5'-aromatic aldehyde-modified oligonucleotide:



Preparation of 5'-heteroaromatic hydrazine-modified oligonucleotide:



Conjugation of hydrazino-modified oligonucleotide to aldehyde-modified oligonucleotide

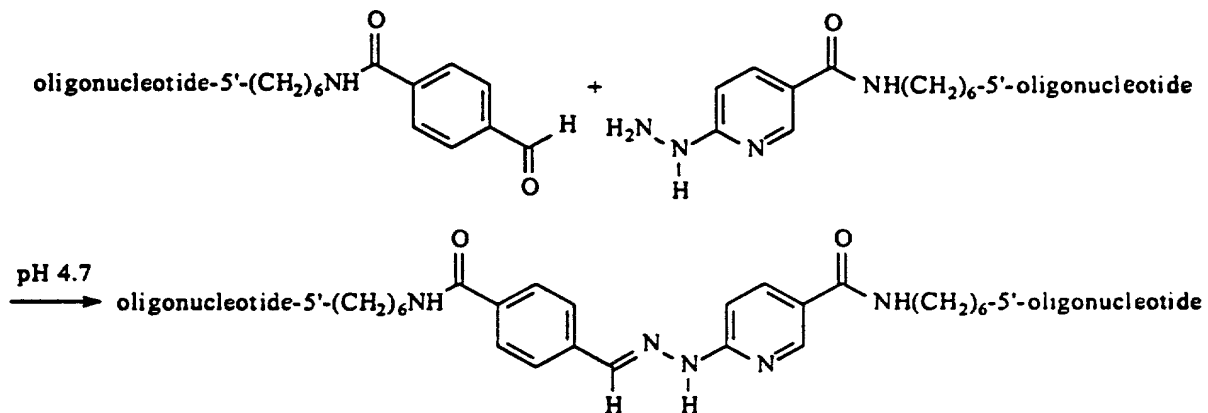
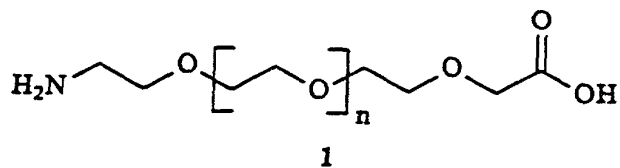
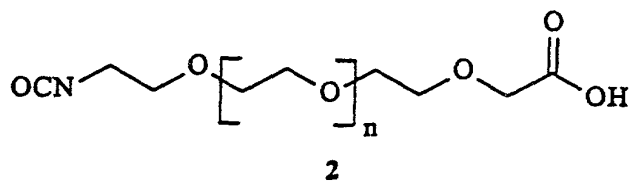


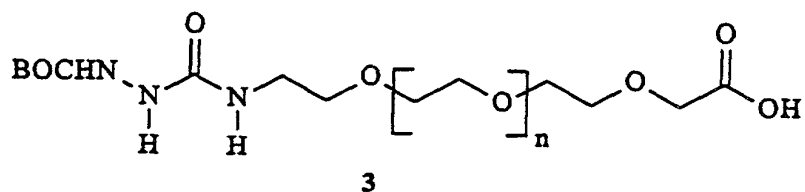
FIG. 5



phosgene, Et₃N, THF

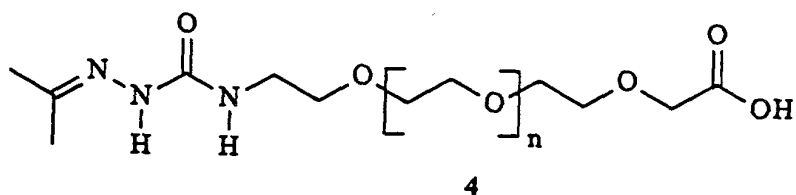


t-butyl carbazate, THF



1) HCl/dioxane

2) acetone, MeOH



NHS, DCC, THF

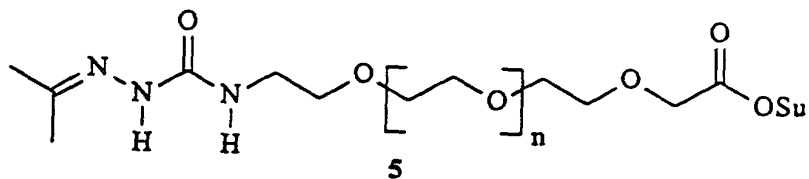


FIG. 6

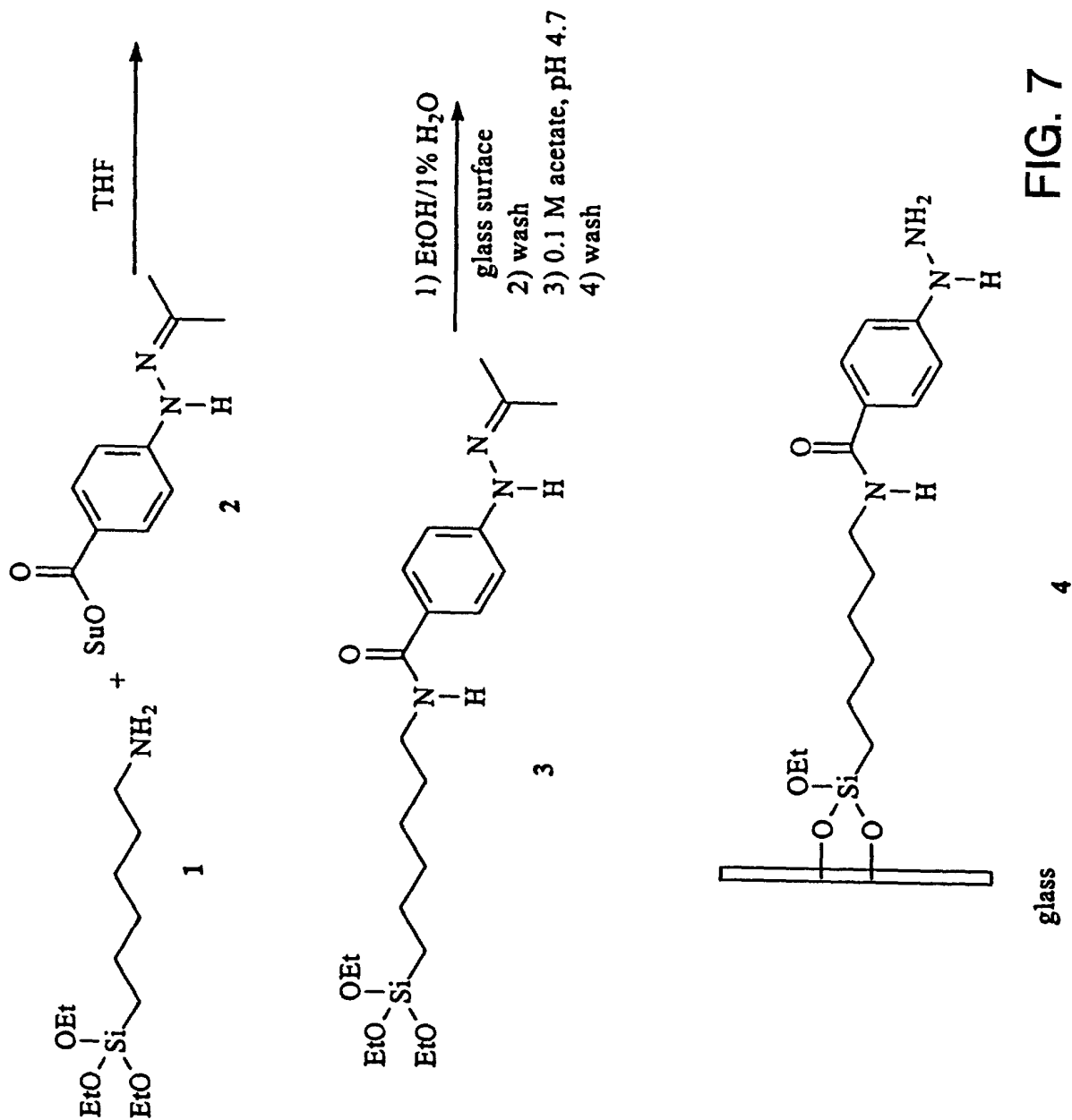


FIG. 7

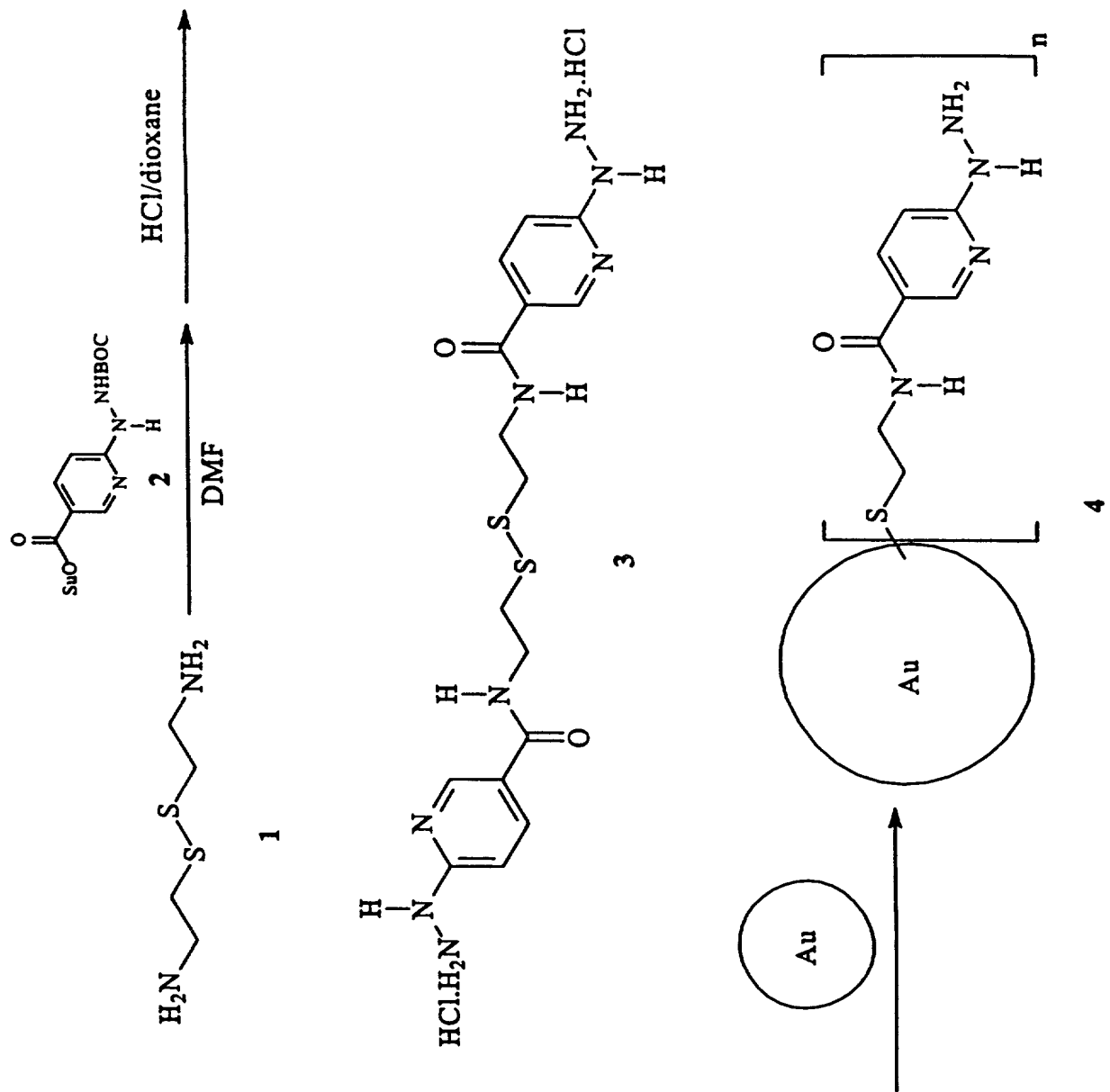


FIG. 8

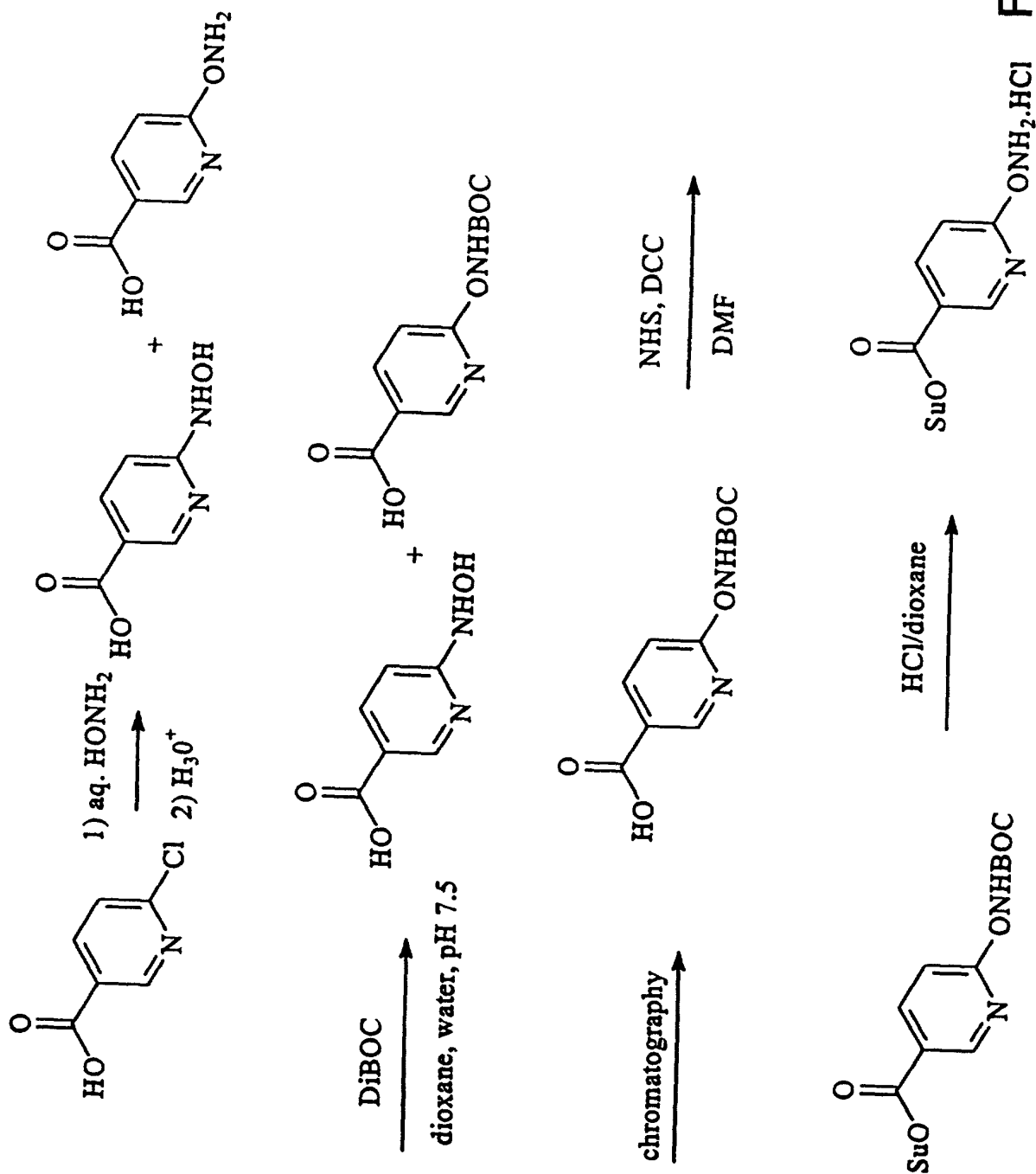


FIG. 9

5/3/01

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Dear Applicant:

The Box PGPub replacement drawings for application number 09/815,978 received on 4/23/01 by the U. S. Patent and Trademark Office will be included for patent publication.

Telephone inquiries should be directed to Customer Service, Office of Initial Patent Examination, at 703-308-1202.



Signature of Reviewer, Office of Initial Patent Examination